Correspondence

The Editorial Board will be pleased to receive and consider for publication correspondence containing information of interest to physicians or commenting on issues of the day. Letters ordinarily should not exceed 600 words, and must be typewritten, double-spaced and submitted in duplicate (the original typescript and one copy). Authors will be given an opportunity to review any substantial editing or abridgement before publication.

Human Immunodeficiency Virus and Hepatitis Testing of Old Bottles of Plasma

TO THE EDITOR: It has been stated by Allen and co-workers[1] that between 5% and 20% of all plasma pools made during World War II and for some time thereafter transmitted serum hepatitis. These pools were made from a large number of donors, often as many as 1,000 or more, and thus if one of these donors carried the hepatitis virus the entire pool would be infectious. If the plasma was lyophilized the infectivity was preserved for extended periods of time.

Nine years ago we reported on the chemical analysis of a 30-year-old bottle of lyophilized plasma.[1] This unit had been preserved as a quality control standard by being lyophilized and having its neck closed by heat sealing. We found that the protein was easily soluble and that most of the enzymes and protein constituents were unchanged or only slightly decreased in activity. We also found that the unit was positive for hepatitis B surface antigen (HBsAg) by radioimmunoassay techniques although negative by counterelectrophoresis.

Recently one of us (CHB) obtained several more 30- to 35-year-old units of plasma. Each bottle was from a different pool of plasma. They were from several manufacturers and were sealed with rubber stoppers that had cracked with age. The outdates of the plasma were between 1956 and 1958 and these outdates were usually five years after the processing. These would have been prepared, and many of the bottles from each lot used, during the Korean War. We were interested in testing these units for the human immunodeficiency virus (HIV, previously designated HTLV-III or LAV) markers, and also for other markers of hepatitis not available at the time of our previous study.

Four units appeared in relatively good condition and were analyzed. All four dissolved poorly and a moderate amount of the proteinaceous material never did dissolve. Electrophoresis of some of the soluble material showed a continuous band of proteinaceous material with no distinct peaks indicating severe denaturation. An aliquot was taken from this material and was analyzed for the HIV and hepatitis markers (see Table 1). The HIV marker reacted in an equivocal manner with slight activity but not enough to be considered positive. We feel that this reactivity is probably due to the poor nature of the material being tested. All of these pools were positive for the hepatitis B core (HBc) total antibody, while none reacted with the hepatitis B core-IgM antibody (HBc-IgM). One was clearly positive for hepatitis B surface antibody (HBsAb) and two were positive for HBsAg. One was positive for the hepatitis Be antigen (HBeAg). All were negative for delta agent.

It has been well established by a number of investigators that pooled plasma retains its infectivity for a long period of time. We were interested to see that these units although stored improperly for 30 to 35 years retained their reactivity for most of the markers used for hepatitis testing today, and were nonreactive for HIV antigens. Previous history has shown that these samples were infectious for hepatitis so this correlates well with the hepatitis markers. We do not feel that we can offer an opinion on the correlation of infectivity and the lack of the HIV antigen on the basis of the few lots tested.

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REFERENCES

1. Allen JG, Emerson DM, Barron ESG, et al: Pooled plasma with little or no risk of homologous serum jaundice. JAMA 1954; 154:703-707

2. Fu P, Myhre B: Chemical analysis of a 30-year-old bottle of lyophilized plasma. Transfusion 1977; 17:73-74

TABLE 1.—*Results of Analysis for HIV and Hepatitis Markers*

	Normal Human Plasma Lot# 10696 21 July 56 Irradiated, Dried Courtland Lab.	*Normal Human Plasma Lot# B-1391-2 18 Oct 56 Irradiated, Dried Sharp & Dohme*	*(Not for Human Use) Normal Human Lot# 3380 3 Feb 58 Treated w/Clm Courtland Lab.*	*Normal Human Plasma Fractions, Lot# 24261 (Outdate Illegible) Heat Treated, Courtland Lab.*
HIV Antibody	Equivocal	Equivocal	Equivocal	Negative
Hepatitis B surface antigen (HBsAg)	Positive	Positive	Negative	Negative
HBsAg confirmation	Positive	Positive		
Hepatitis Be antigen (HBeAg)	Negative	Positive		
Hepatitis Be antibody (HBeAb)	Negative	Negative		
Hepatitis B core antibody (HBcAb)	Positive	Positive	Positive	Positive
Hepatitis B core-IgM antibody (HBc-IgM)	Negative	Negative	Negative	Negative
Hepatitis B surface antibody (HBsAb)	Equivocal	Negative	Positive	Negative
Hepatitis delta antibody	Negative	Negative	Negative	Negative